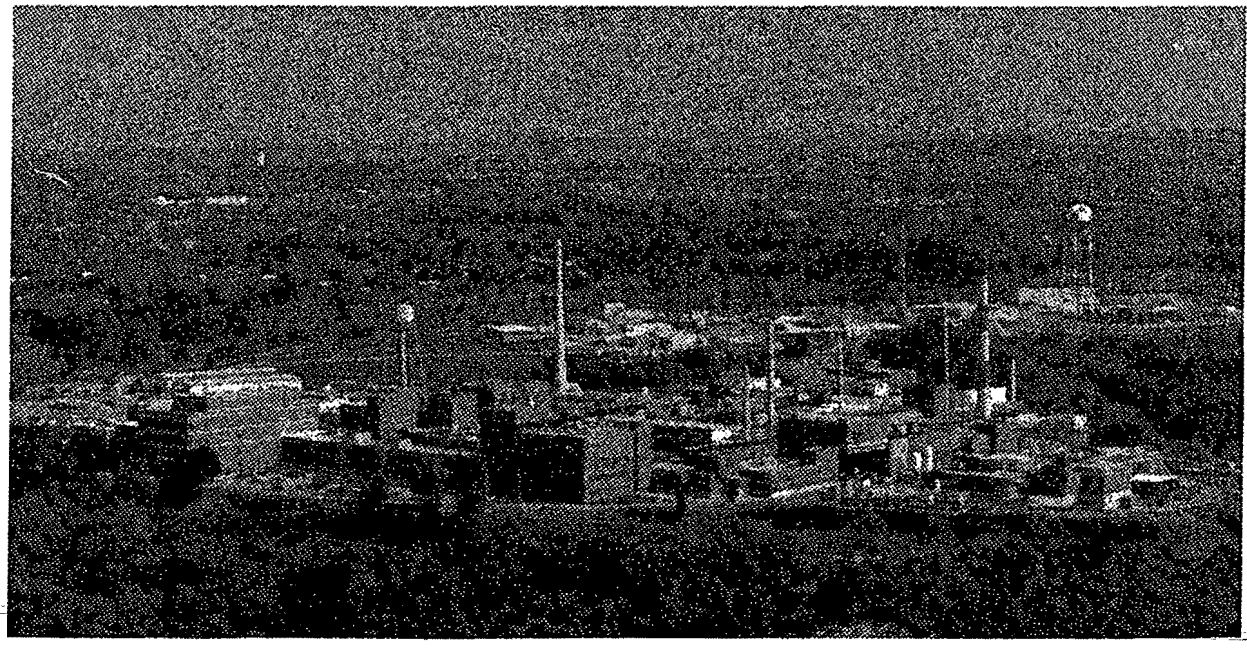
EG&G MOUND-30-03-04-02--9708070082

MOUND

Environmental
Restoration
Program

MOUND PLANT
Potential Release Site Package
PRS # 356



MOUND

Environmental Restoration Program

MOUND PLANT POTENTIAL RELEASE SITE PACKAGE

Notice of Public Review Period

The following potential release site (PRS) packages will be available for public review in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio beginning May 8, 1997. Public comment will be accepted on these packages from May 8, 1997, through June 9, 1997.

PRS 40: Soil Contamination - Bldg. 66 Parking Lot Area
PRS 110: Soil Contamination - I Building
PRS 113/114/115/116/117: Soil Contamination - Powerhouse/Former Tank Site - Powerhouse Fuel Oil Storage Tank
PRS 235: Soil Contamination - Area southwest of Building 98
PRS 304/313: Disposal Site for Contaminated Soils - Area southwest of Bldg. 105/Soil Contamination - Radiological Survey Site location S0982
PRS 354: Soil Contamination
PRS 356: Soil Contamination

Questions can be referred to Mound's Community Relations at (937) 865-4140.

MOUND

Environmental Restoration Program

MOUND PLANT POTENTIAL RELEASE SITE PACKAGE

Notice of Public Review Period

The following potential release site (PRS) packages have been placed in the CERCLA Public Reading Room, 305 E. Central Ave., Miamisburg, Ohio. The public comment period has been extended on these packages to June 16, 1997.

PRS 40: Soil Contamination - Bldg. 66 Parking Lot Area
PRS 110: Soil Contamination - I Building
PRS 113/114/115/116/117: Soil Contamination - Powerhouse/Former Tank Site - Powerhouse Fuel Oil Storage Tank
PRS 235: Soil Contamination - Area southwest of Building 98
PRS 304/313: Disposal Site for Contaminated Soils - Area southwest of Bldg. 105/ Soil Contamination - Radiological Survey Site location S0982
PRS 354: Soil Contamination
PRS 356: Soil Contamination

Questions can be referred to Mound's Community Relations at (937) 865-4140.

PRS 356

REV	DESCRIPTION	DATE
0 PUBLIC RELEASE	Available for comments.	Mar. 11, 1997
1 FINAL	Comment period expired. Comments. Recommendation page annotated.	July 28, 1997

The Mound Core Team
P.O. Box 66
Miamisburg, Ohio 45343-0066

xc: Bob, Jim, Ken, Gary, Denny, Joe, Mary 7/21/97

July 17, 1997

Miamisburg Mound Community Improvement Corporation
720 Mound Road
COS Building 4221
Miamisburg, Ohio 45342-6714

Dear Mr. Bird:

The Core Team consisting of the U.S. Department of Energy Miamisburg Environmental Management Project (DOE-MEMP), U.S. Environmental Protection Agency (USEPA), and the Ohio Environmental Protection Agency (OEPA) appreciates the input provided by the public stakeholders of the Mound facility. The public stakeholders have significantly contributed to the forward progress that has been made on the entire release block strategy for establishing the safety of the Mound property prior to its return to public use after remediation and residual risk evaluation.

Attached please find responses to your June 16, 1997 comments on PRS packages 110, 113-117, 235, 304/313. 354. and 356, as well as the "Residual Risk Evaluation - Release Block H, April, 1997, Revision 0." Document revisions in accordance with the attached responses are expected to be completed in August, 1997.

Should the responses require additional detail, please contact Art Kleinrath at (937) 865-3587 and we will gladly arrange a meeting or telephone conference.

Sincerely,

DOE/MEMP: Arthur W. Kleinrath
Arthur W. Kleinrath, Remedial Project Manager

USEPA: Timothy J. Fischer
Timothy J. Fischer, Remedial Project Manager

OHIO EPA: Brian K. Nickel
Brian K. Nickel, Project Manager

Reference: Responses to June 16, 1997 Miamisburg Mound Community Improvement Corporation Comments Regarding PRS Packages 113-117, 235, 304/313, 354, and 356

PRS 356

Substantive Comments:

1) Semi-volatiles which exceed their guideline criteria (benzo(a) pyrene) or those which were detected but for which no guideline values or background concentrations were given are listed below:

acenaphthylene (J-modified)
benzo (g,h,i) perylene
carbazole (J-modified)
dibenzofuran (J-modified)
fluorene (J-modified)
2-Methylnaphthalene (J-modified)
Naphthalene (J-modified)
Phenanthrene (J-modified)

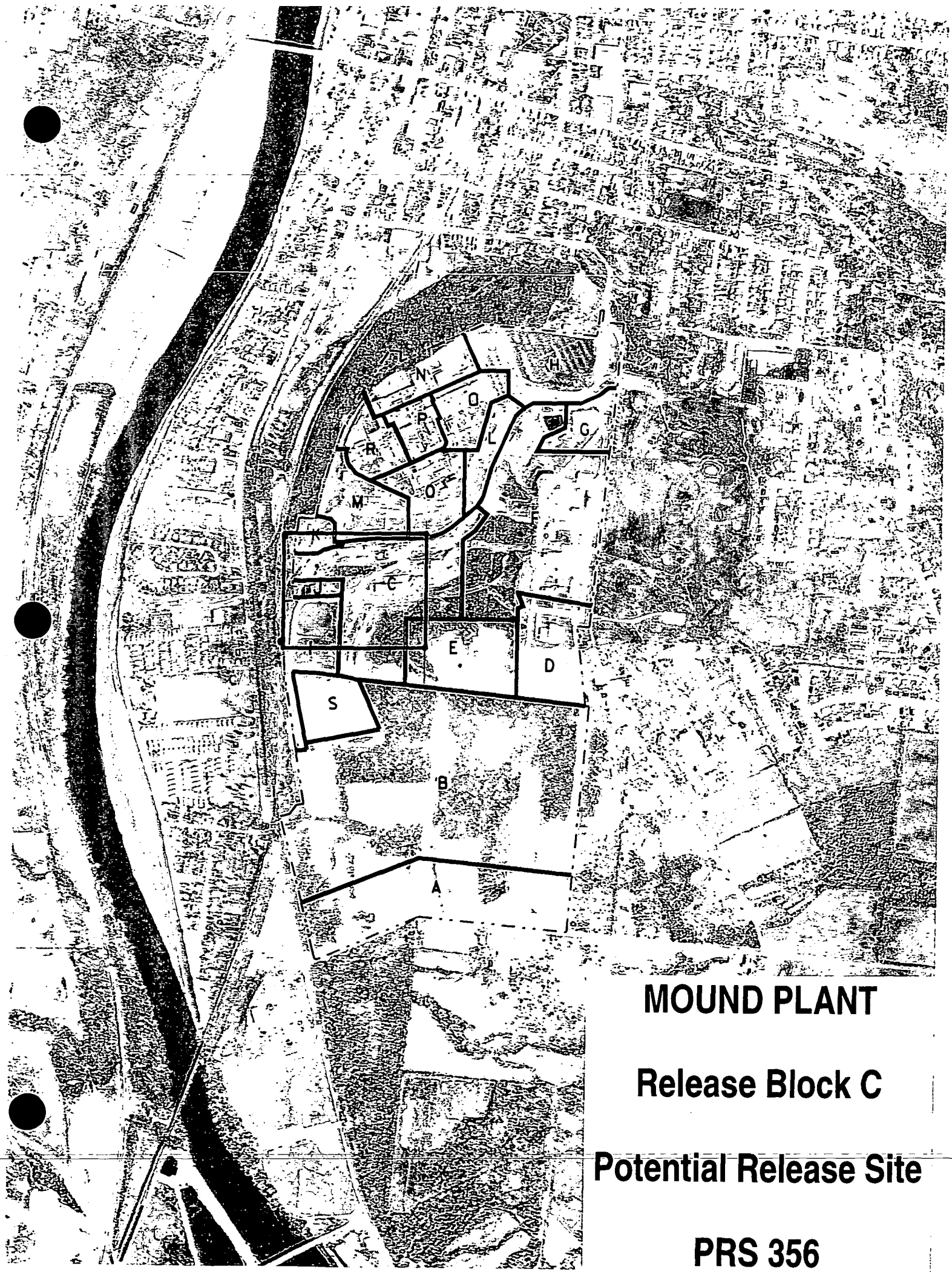
How did the Core Team evaluate these detections? (i.e., were the J-modified detections ignored?) How was the benzo(a) pyrene handled?

Response:

1) In the case of semi-volatiles (benzo(a) pyrene) which exceed their guideline criteria, it is between 10^{-5} and 10^{-6}, which is within the acceptable risk range of 10^{-4} to 10^{-6} per the National Contingency Plan (NCP).

The J-modified values were not ignored. They will come into the risk evaluation process later on at 1/2 the detection limit.

We do take estimated values into account. In the case where there is no guideline criteria, they were compared by analogy to other chemicals of that family (i.e., PAH, VOC).

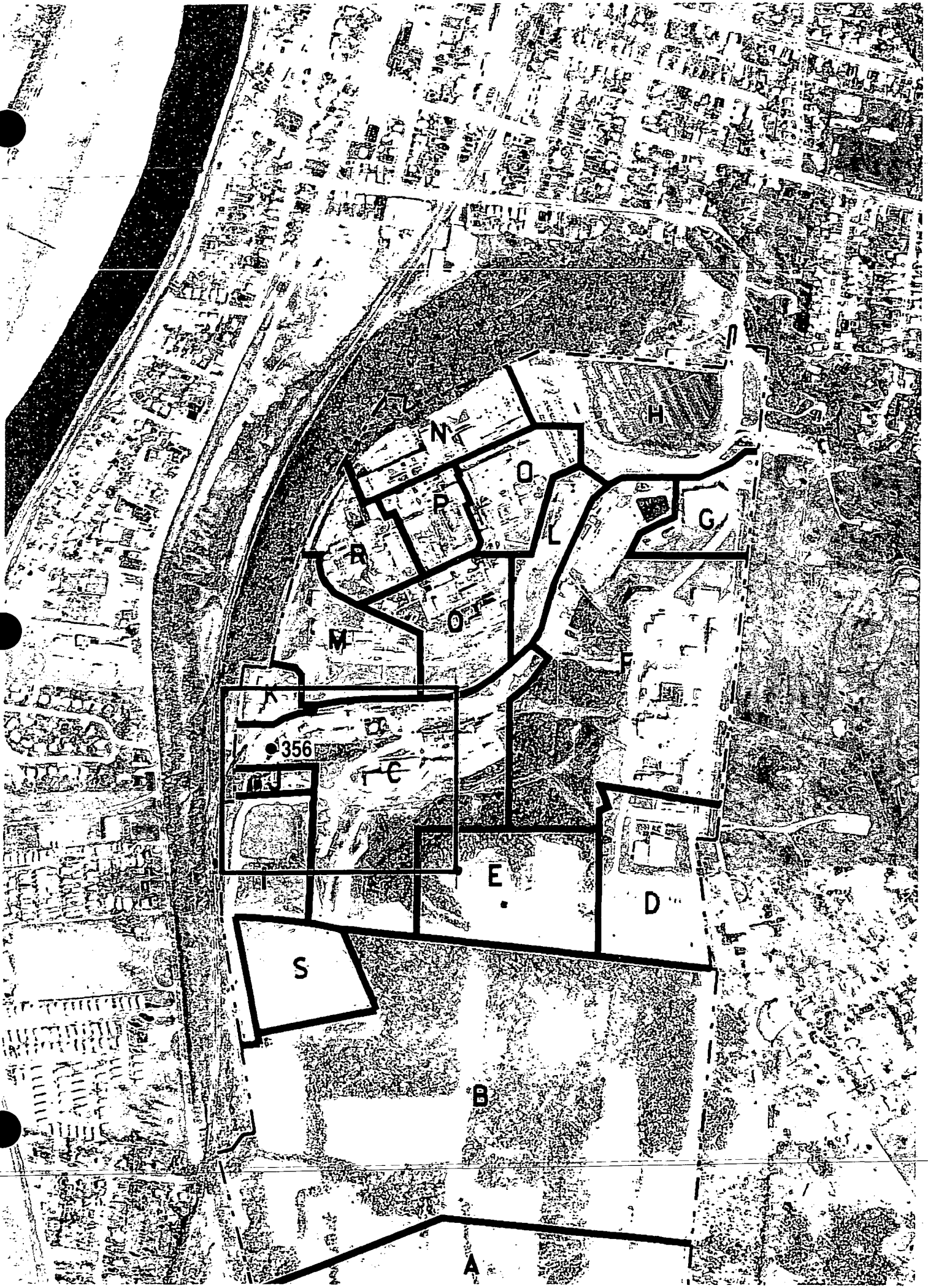


MOUND PLANT

Release Block C

Potential Release Site

PRS 356


H
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356
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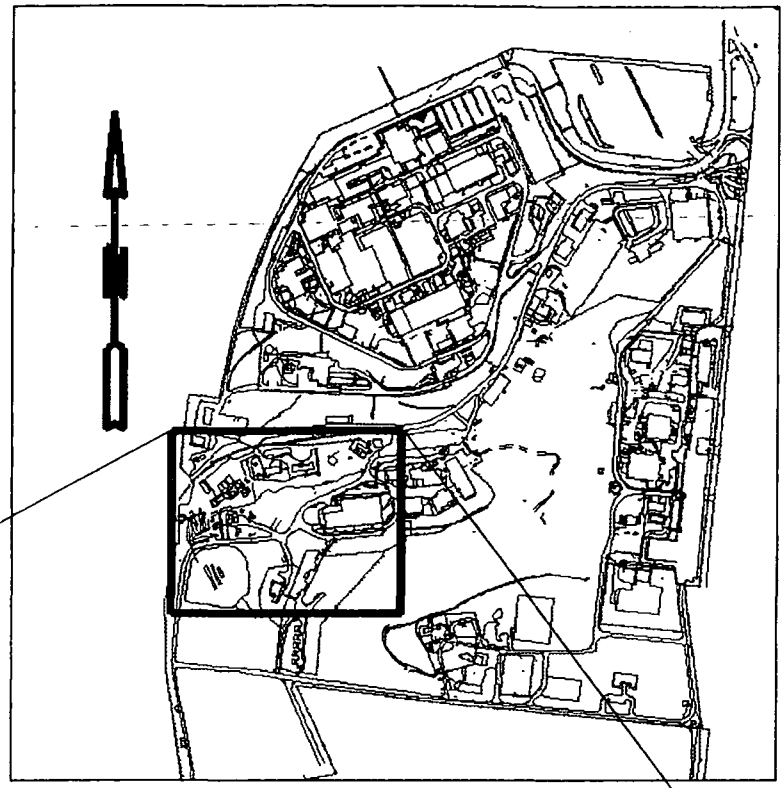
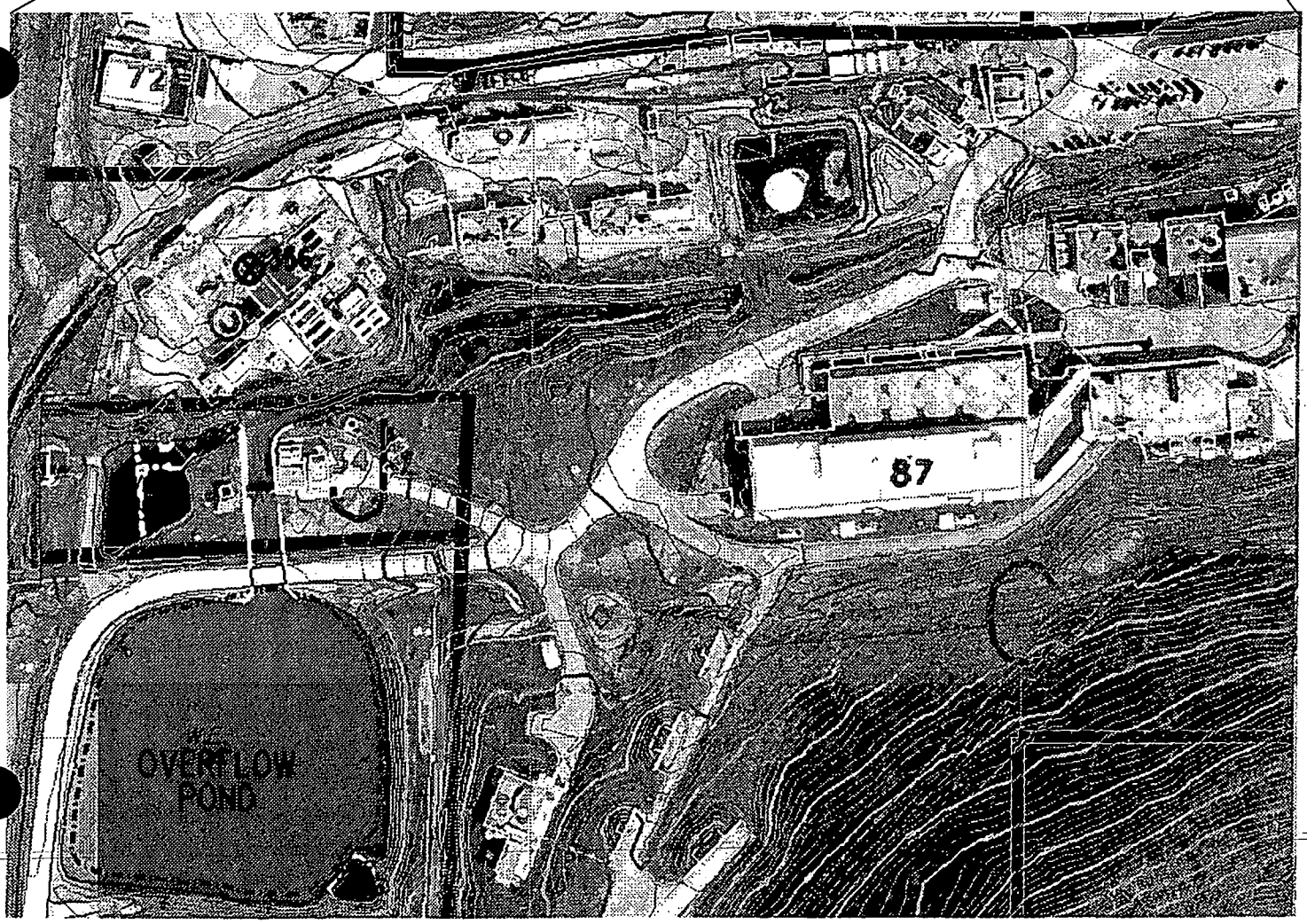
Mound Plant

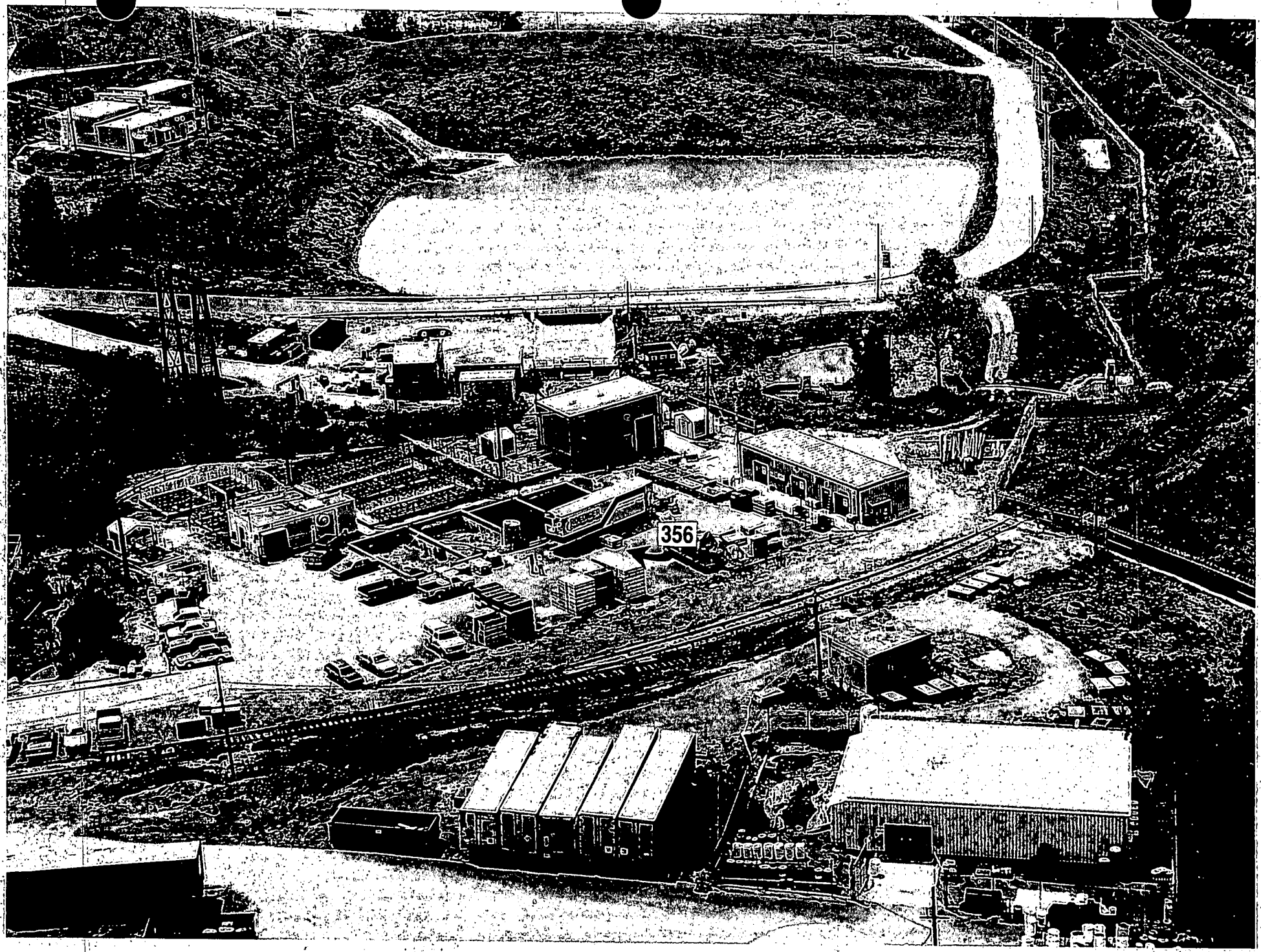
Release Block C

Potential Release Site

PRS 356






356

PRS 356

PRS HISTORY:

Potential Release Site (PRS) 356 is a soils location just west of the Sewage Disposal Building (Building 57) in the parking lot next to the sewage disposal plant's sludge drying beds. The sewage disposal plant has been in operation since 1975 treating the sanitary and process wastewater produced by the Mound Plant. PRS 356 was identified as a potential release site as a result of relatively high hydrocarbons detected during the 1994 qualitative PETREX soil gas portion of the *OU5, Operational Area Investigation.*[1]

CONTAMINATION:

1) In 1983, the ***Mound Radiological Site Survey***[2] analyzed four core soil samples taken at two locations within 50 feet of PRS 356 (locations #C0116 and #C0112). The map on page 12 of the references section shows the location of PRS 356 relative to the sample locations C0116 and C0112. Samples were analyzed by Mound FIDLER (field instrument for detecting low energy radiation), Mound soil screening, radiochemistry and gamma spectroscopy. Sample results showed
   - Plutonium-238 at 0.24 pCi/g (Mound ALARA guideline criteria equals 25 pCi/g).
   - Thorium-232 at less than 2.0 pCi/g (Regulatory guideline criteria equals 5 pCi/g [ref 5]).

2) In 1994, the ***OU5, Operational Area Phase I Investigation***[1] analyzed this site for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) via a qualitative PETREX soil gas survey. The *OU5, Non-AOC Investigation* also analyzed Mound surface soils for radiological contamination using a FIDLER and the Mound soil screening facility data. Sample results corresponding to PRS 356 are listed relative to coordinates (9N 25W) and sample #1093 within the referenced material (see maps on pages 6-9 of the reference section) . Results showed:
   - Relatively high aromatic, semivolatile and petroleum hydrocarbon ion counts
   - 13 pCi/g for plutonium-238 (Mound ALARA guideline criteria equals 25 pCi/g).
   - 0.6 pCi/g for thorium-232 (Regulatory guideline criteria equals 5 pCi/g [ref 4]).

3) In February 1996, the ***Soil Gas Confirmation Investigation***[5] took quantitative soil samples within 50 feet of PRS 356. Confirmation soil sample #80 was taken over a depth of 10 to 20 inches and analyzed for volatiles, semivolatiles, PCBs, pesticides, metals, radionuclides, and explosives (see map on page 18 of the reference section for the location of PRS 356 relative to soil sample #80). Results of the investigation showed:
   A) All semivolatile concentrations were below the Risk Based Soil Guideline Criteria with the exception of benzo(a)pyrene (see table below):

Contaminant	Maximum Concentration Detected[5]	Guideline Criteria[3]
Benzo(a) pyrene	850 ug/kg (in soil)	410 ug/kg (in soil)

B) All volatile, metals and radionuclide concentrations were below the applicable 10^{-6} Risk Based, ALARA or regulatory Guideline Criteria.[3, 4, 5]

C) No PCBs, pesticides or explosives were detected.[5]

READING ROOM REFERENCES:

1) OU5, Operational Area Phase I Investigation, Non-AOC Field Report, Volumes 1 and II, June 1995, Rev 0. (pages 5-10)
2) OU9, Site Scoping Report: Volume 3 - Radiological Site Survey, Final, June 1993. (pages 11-13)
3) Risk-Based Soil Guidelines, Final, Revision 0, December 1995.

OTHER REFERENCES:

4) Code of Federal Regulations, 40 CFR 192.12 and 40 CFR 192.41.
5) Further Assessment, Soil Gas Confirmation Sampling, May 1996. (pages 14-22)

PREPARED BY:

Irwin D. Dumtschin, Member of EG&G Technical Staff
George Liebson, Member of EG&G Technical Staff

MOUND PLANT
PRS 356
SOIL CONTAMINATION

RECOMMENDATION:

This area was identified as a potential release site in June 1994 due to qualitative PETREX soil gas results obtained during the Operable Unit 5, Operational Area Phase I Investigation. A subsequent quantitative *Soil Gas Confirmation Investigation* within 50 feet of PRS 356 showed that all concentrations of volatile, semivolatile, PCBs, pesticides, metals, radionuclides, and explosives in the soils were below their respective ALARA, regulatory or 10^{-5} Risk Based Guideline Criteria. Therefore, NO FURTHER ASSESSMENT is recommended for PRS 356.

CONCURRENCE:

DOE/MEMP: Arthur W. Kleinrath, Remedial Project Manager 2/19/1997 (date)

USEPA: Timothy J. Fischer, Remedial Project Manager 2/19/97 (date)

OEPA: Brian K. Nickel, Project Manager 2/19/97 (date)

SUMMARY OF COMMENTS AND RESPONSES:

Comment period from 5/8/97 to 6/16/97

☐ No comments were received during the comment period.

☒ Comment responses can be found on page 1, 2 of this package.

REFERENCE MATERIAL
PRS 356

Document Control No._____

Environmental Restoration Program

OPERABLE UNIT 5
OPERATIONAL AREA PHASE I INVESTIGATIC
NON-AOC FIELD REPORT

MOUND PLANT
MIAMISBURG, OHIO

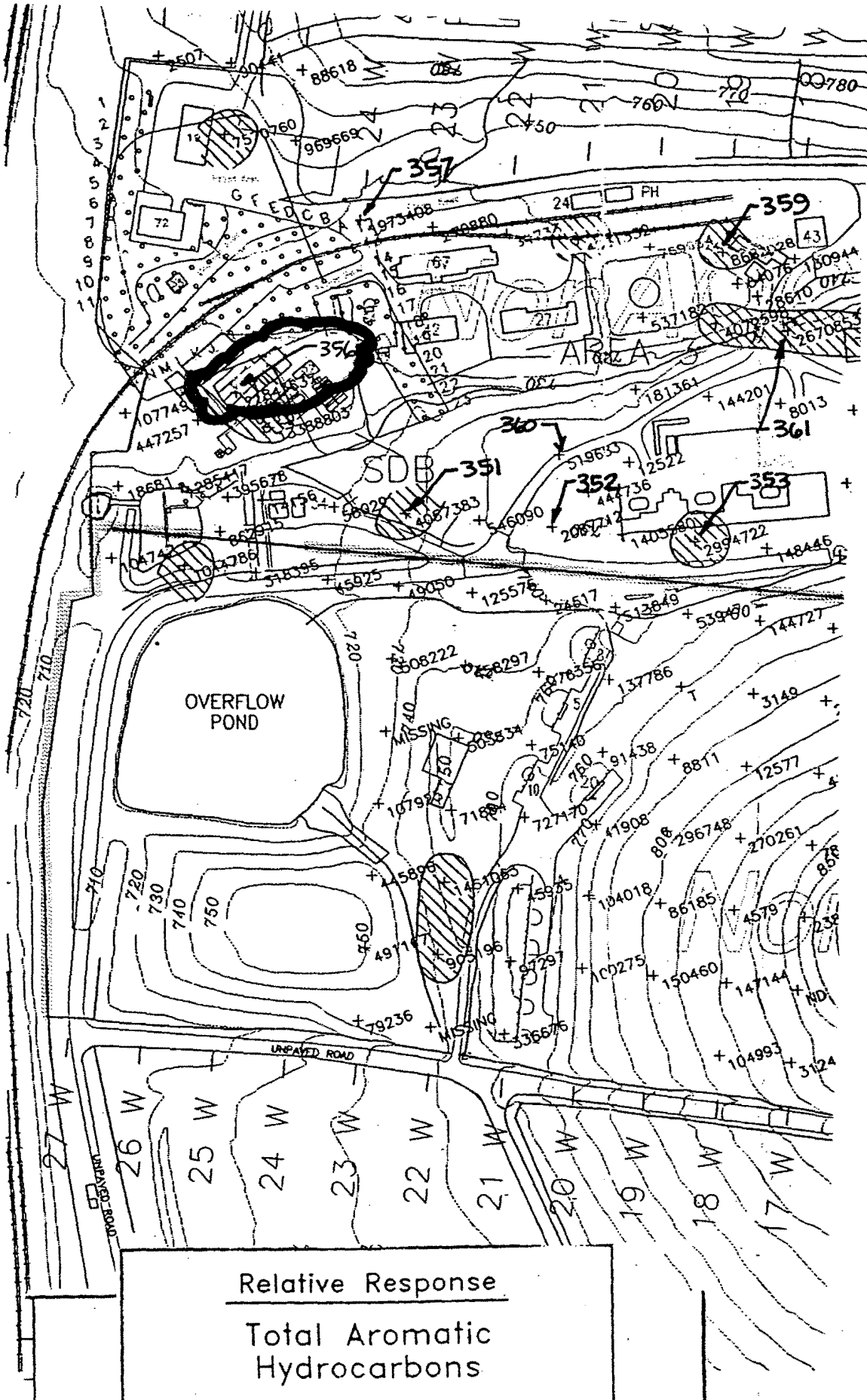
VOLUME II - APPENDICES A-G

June 1995

Final (Revision 0)

U.S. Department of Energy
Ohio Field Office

EG&G Mound Applied Technologies

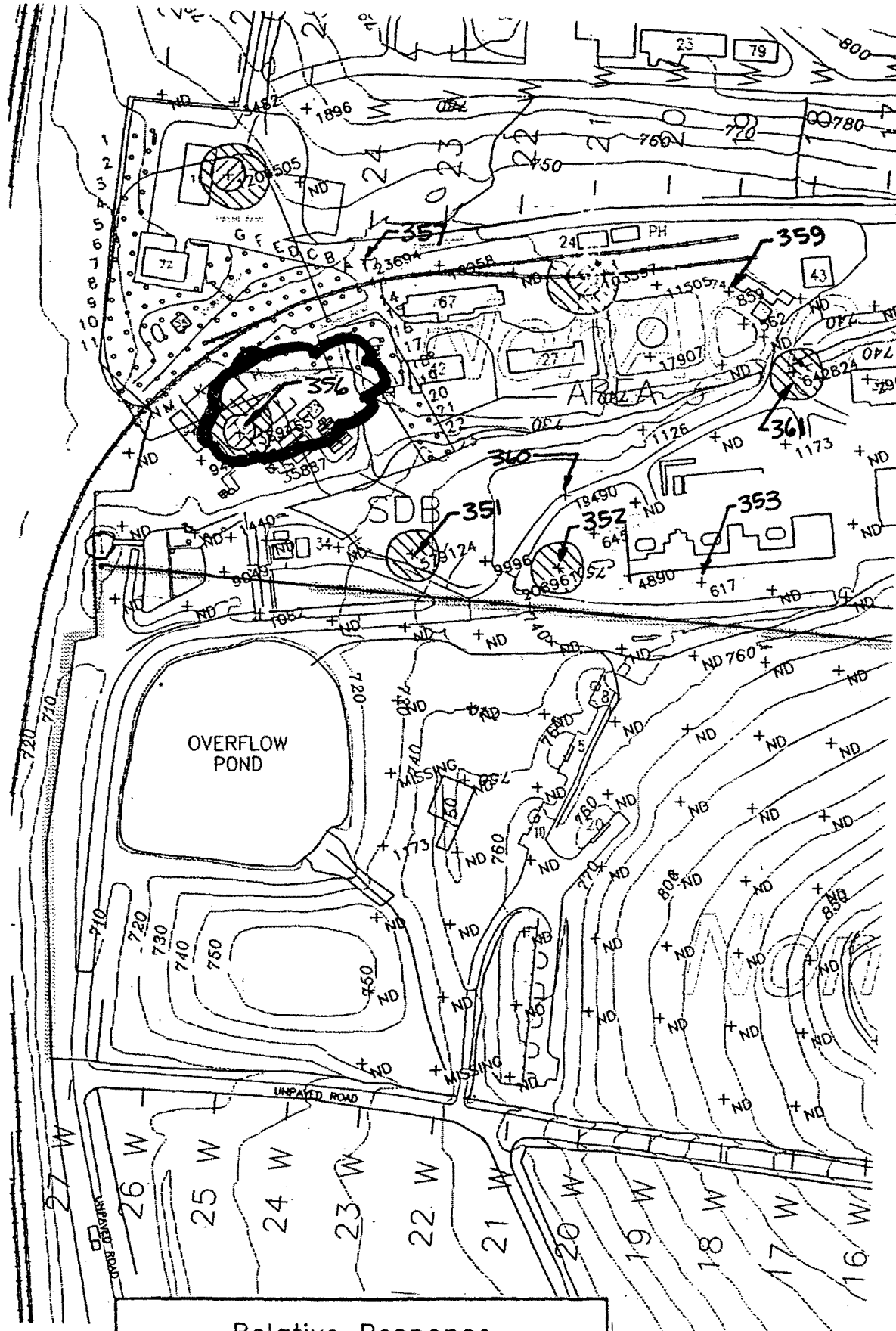


Relative Response

Total Aromatic Hydrocarbons

Plate 2

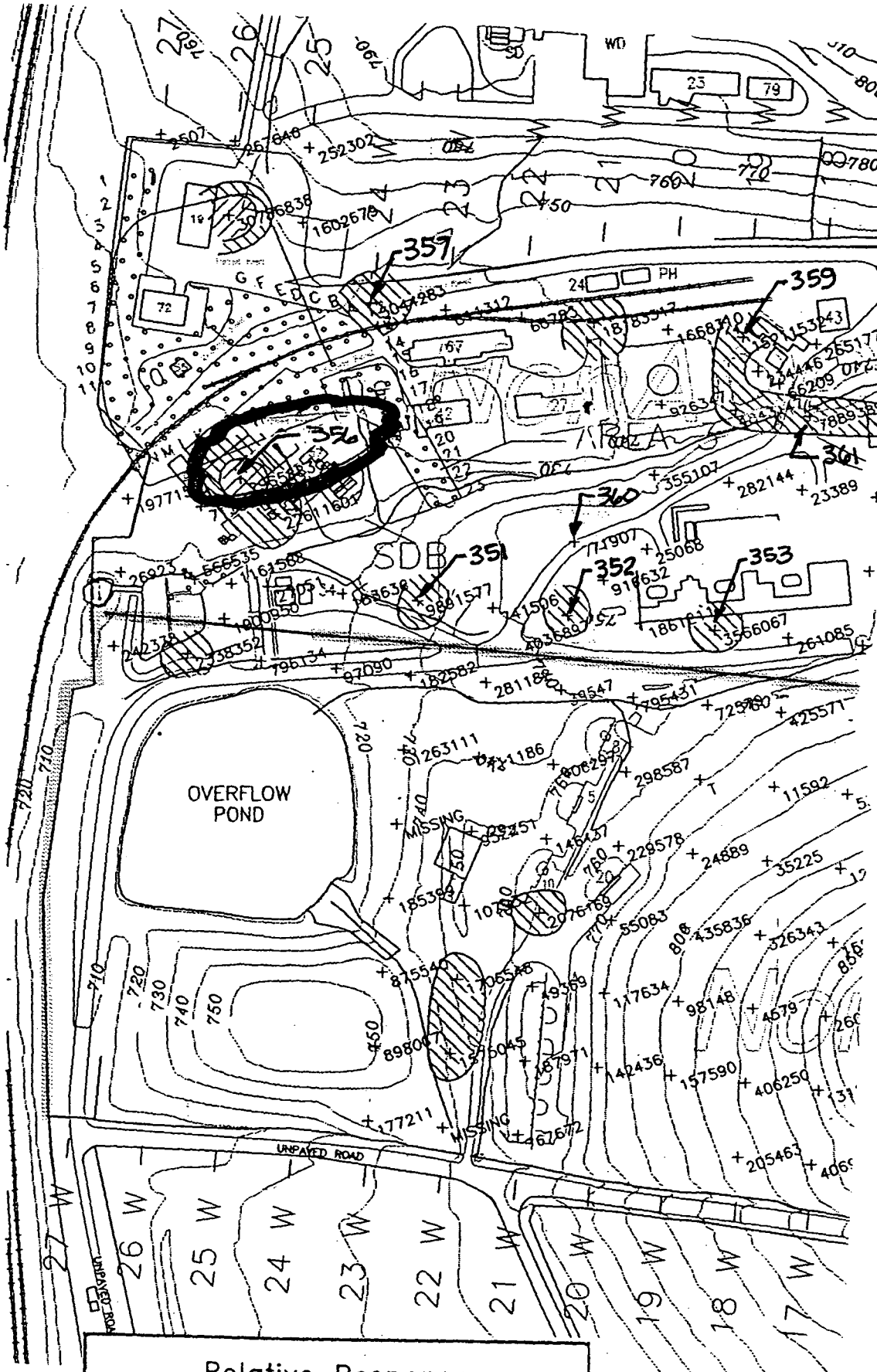
Drawn By: Project



Relative Response

Total Semivolatile Hydrocarbons

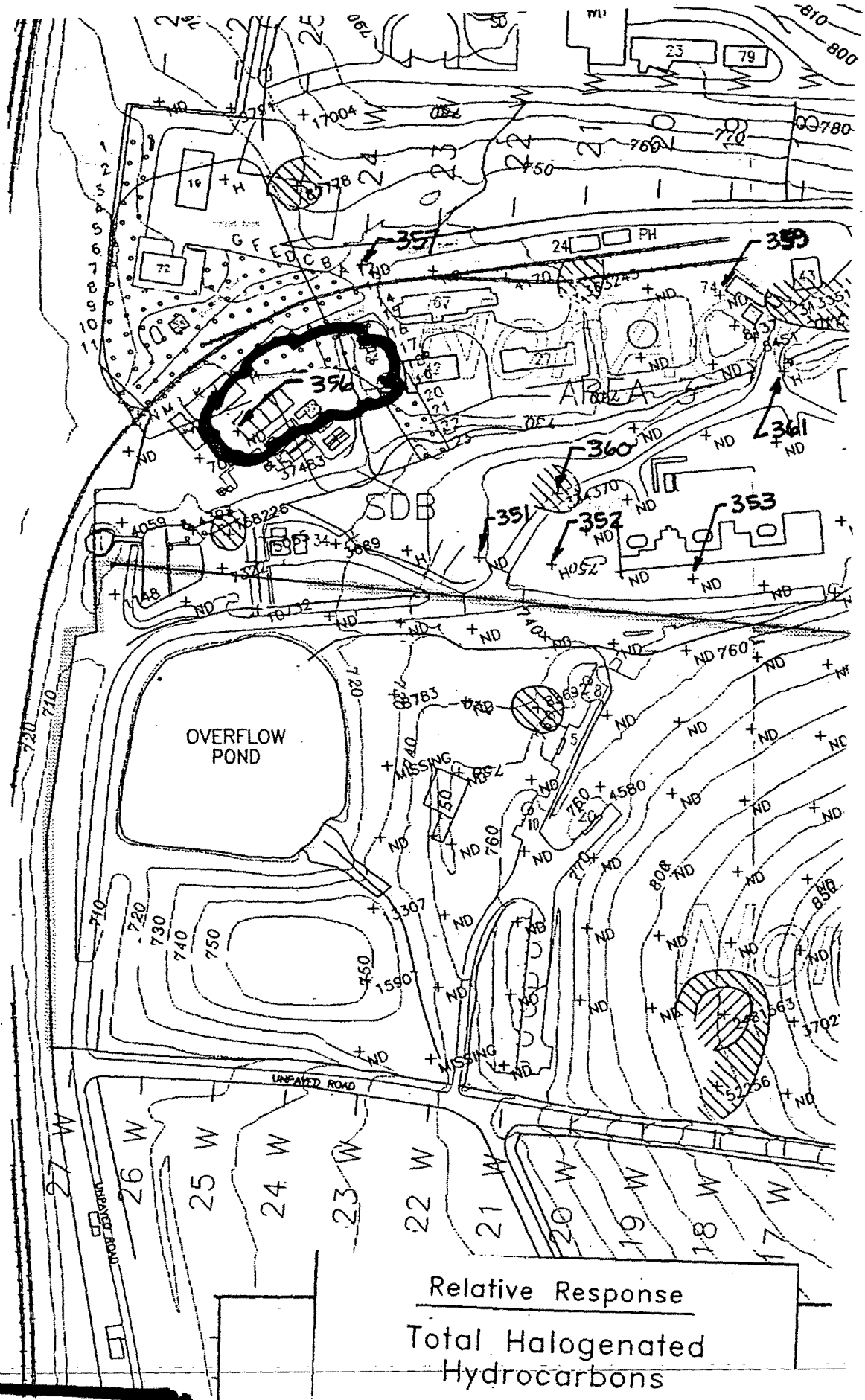
Plate 3



Relative Response

Total C5-C11 Petroleum Hydrocarbons

Plate 4



Relative Response

Total Halogenated Hydrocarbons

ND = NON-DETECT

Plate 5

APPENDIX D

RADIOLOGICAL DATA (FIDLER SURVEY MOUND SOIL SCREENING FACILITY DATA) FOR NON-AOC POINTS

	FIDLER SURVEY DATA					MOUND SOIL SCREENING FACILITY DATA			
SMPID	Contamination Criteria CH1	FIDLER Readings CH1	Contamination Criteria CH2	FIDLER Readings CH2	FIDLER Readings Out Channel	Plutonium - 238		Thorium - 232	
	Units: CPM	Units: CPM	Units: KCPM	Units: KCPM	Units: KCPM	Units: pCi/g		Units: pCi/g	
	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	RESULTS	Note:	RESULTS	Note:
09N10	213.2	90	13.13	10.0	NC	25	b	0.9	a
09N11	213.2	70	13.13	4.5	NC	8	a	0.9	a
09N12	213.2	140	13.13	9.0	NC	18	a	1.2	a
09N13	213.2	140	13.13	9.0	NC	7	a	1.5	a
09N14	130	110	6.5	6.0	NC	14	a	0.8	a
09N15	130	105	6.5	6.0	NC	7	a	0.8	a
09N16	130	60	6.5	4.5	NC	11	a	0.6	a
09N17	130	80	6.5	4.5	NC	2	a	1.1	a
09N18	130	80	6.5	4.5	NC	NC		NC	
09N19	130	70	6.5	4.0	NC	NC		NC	
09N20	130	75	6.5	4.5	NC	NR		NR	
09N21	157.3	95	8.45	4.0	NC	NR		NR	
09N22	117.0	80	8.71	6.0	NC	NC		NC	
356 09N25	157.3	50	8.45	4.0	NC	WIPE	c	WIPE	c
09N26	157.3	80	8.45	4.0	NC	NR		NR	
09N27	143	100	6.63	7.5	NC	13	a	0.6	a
10N01	253.5	180	12.48	9.5	NC	4	a	1	a
10N02	122.2	100	5.59	4.0	NC	WIPE	c	WIPE	c
10N03	130	90	[illegible]	[illegible]	NC	WIPE	c	WIPE	c
10N04	130	80						0	a
10N05	122.2	85						0.9	a
10N10	213.2	70						0.8	a
10N11	213.2	110						0.6	a
10N12	213.2	90						1.1	a
10N13	130	115						0.9	a
10N14	130	50						0	a
10N15	130	85						0.6	a
[illegible]	130	60	6.5	4.0	NC	WIPE	c	WIPE	c

NC - No sample collected because location not an original grid point
NA - Reading not taken; contamination criteria not exceeded.
NS - Sample collected but not analyzed.
a - Mound Soil Screening Facility detection level not exceeded.
c - Results of the wipe sample were less than 20 disintegrations per minute.
CPM - Counts per minute
KCPM - Counts per minute x 1000
pCi/g - Picocuires per gram

Document Control No: DGC

Environmental Restoration Program

OPERABLE UNIT 9, SITE SCOPING REPORT
VOLUME 3 - RADIOLOGICAL SITE SURVEY

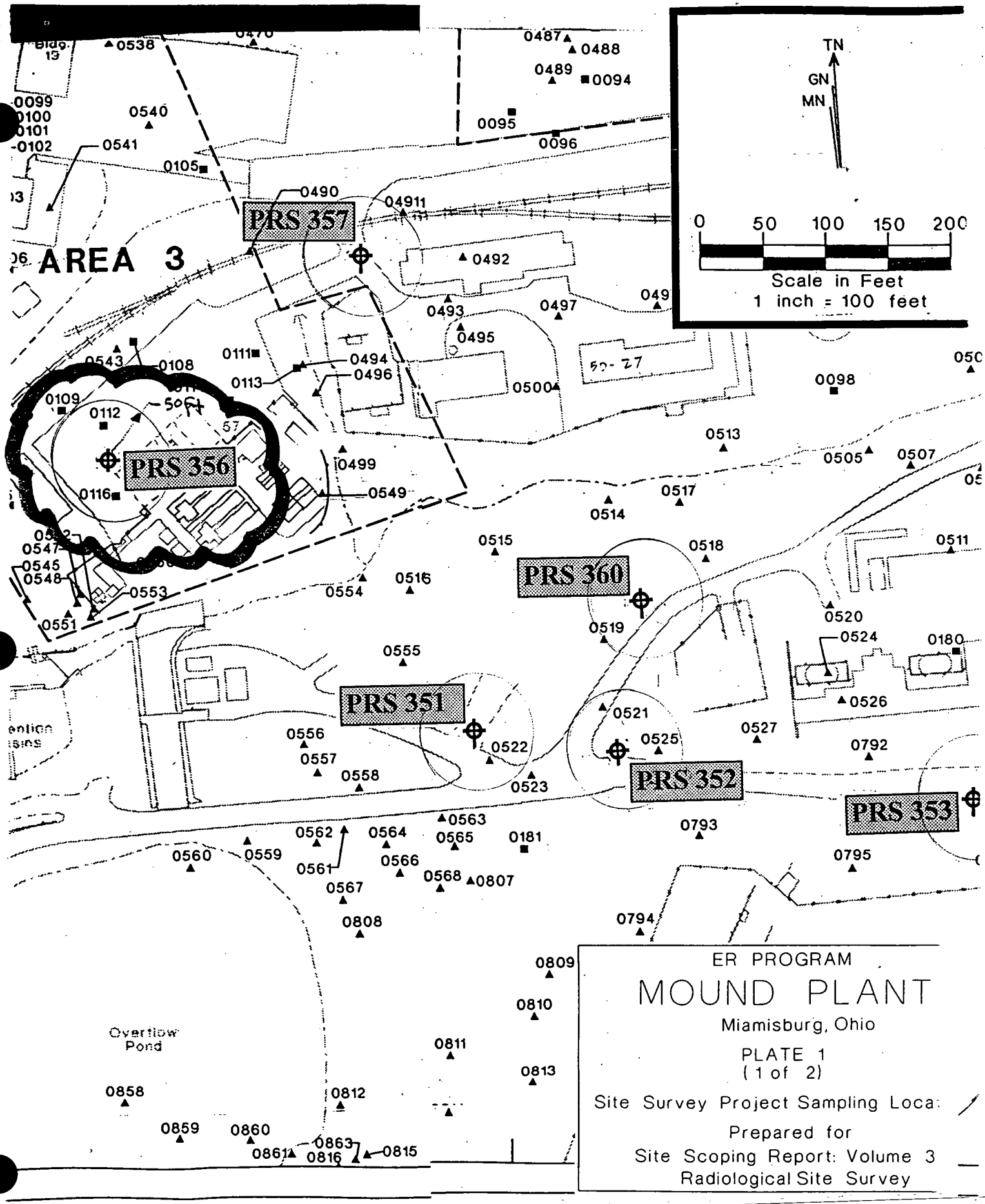
MOUND PLANT
MIAMISBURG, OHIO

June 1993

FINAL

Department of Energy
Albuquerque Field Office

Environmental Restoration Program
EG&G Mound Applied Technologies


TN
GN
MN
0 50 100 150 200
Scale in Feet
1 inch = 100 feet
AREA 3
PRS 357
PRS 356
PRS 360
PRS 351
PRS 352
PRS 353
Overflow Pond
ER PROGRAM
MOUND PLANT
Miamisburg, Ohio
PLATE 1
(1 of 2)
Site Survey Project Sampling Loca
Prepared for
Site Scoping Report: Volume 3
Radiological Site Survey

Map Location[a]	Coordinates South	Coordinates West	MRC ID No.	Mo-Yr	Depth (inch)	Pu-238 (pCi/g)	Thorium[b] (pCi/g)	Tritium (pCi/mL)	Co-60 (pCi/g)	Cs-137 (pCi/g)	Ra-226 (pCi/g)	Am-241 (pCi/g)

[a]C denotes core location and S denotes surface sample location on Plate 1.
[b]Thorium results of ≤ 2 pCi/g are listed as "b".
[c]Verification sample analyzed for QA/QC.
[d]No MRC ID assigned because *in situ* gamma spectrometry was performed for thorium-232.
[e]Gamma results could not be confirmed using the gamma spectroscopy printout given in this appendix.
[f]The depth for this sample was given as "SS". For mapping purposes (Plates 1 and 5), this is assumed to be a surface sample.
[g]Sample results were given isotopically for this sample and included 0.99 pCi/g thorium-228; 321 pCi/g thorium-230; and 1.5 pCi/g thorium-232, for a total of 323.5 pCi/g.

C0111	2250	4165	1636	04-83	18	0.82	b					
			1637	04-83	36	0.01	b					
PRS 356 → C0112	2250	4300	1640	04-83	18	0.02	b					
			1641	04-83	36	0.03	b					
C0113	2275	4140	7759	09-84	90	2.83	b					
			7760	09-84	180	0.03	b					
C0114	2275	4200	1638	04-83	18	0.16[c]	b					
			1639	04-83	36	0.01	b					
C0115	2275	4395	1644	04-83	18	1.46	3.56					
			1646	04-83	36	0.31	b					
PRS 356 → C0116	2305	4315	1642	04-83	18	0.05	b					
			1643	04-83	36	0.24	b					
S0544	2325	4465	6877	08-84	0	13.40	b					
S0545	2350	4415	6876	08-84	0	4.16	b					
S0546	2350	4465	6875	08-84	0	4.90	b					
S0547	2365	4375	10485	08-85	0	11.00	5.30					
S0548	2370	4380	10488	08-85	0	5.77	b					
S0549	2375	4165	6880	08-84	0	0.23	b					

MOUND

Environmental
Restoration
Program

Further Assessment

Soil Gas Confirmation Sampling

Mound Plant
Miamisburg, Ohio

May 1996

Revision 0

Department of Energy

EG&G Mound Applied Technologies

Table I.1 Soil Analyte List

Volatile Organic Compounds

Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
2-Butanone
Carbon Disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Dibromochloromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethene (total)
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
2-Hexanone
Methylene Chloride
4-Methyl-2-Pentanone
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane-
Trichloroethene
Toluene
Vinyl Acetate
Vinyl Chloride
Xylenes (total)

Semivolatile Organic Compounds

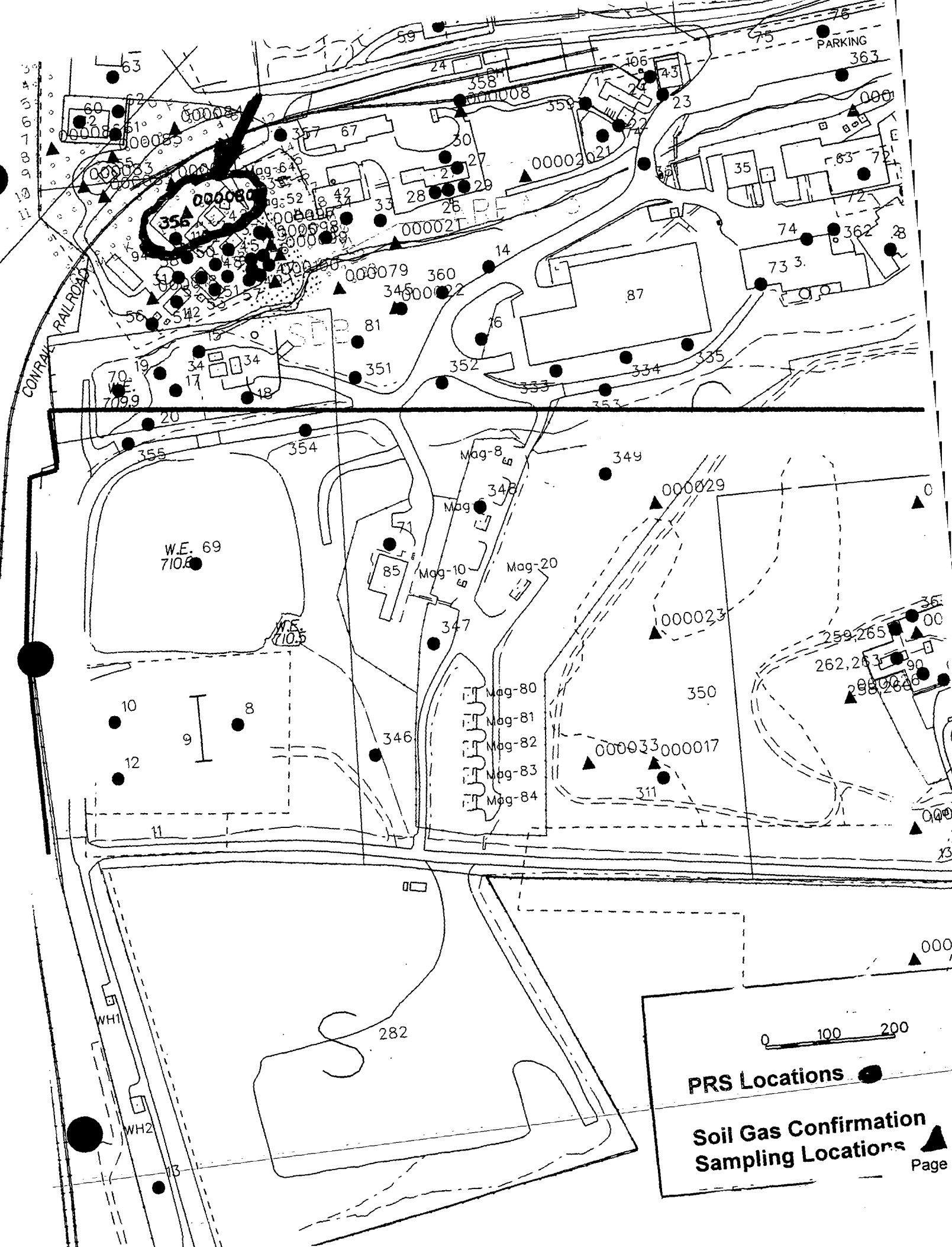
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
bis(2-Chloroethoxy)methane
bis(2-Chloroethyl)ether
bis(2-Ethylhexyl)phthalate
4-Bromophenyl-phenylether
Butylbenzylphthalate
Carbazole
4-Chloroaniline
4-Chloro-3-methylphenol
2-Chloronaphthalene
2-Chlorophenol
4-Chlorophenyl-phenylether
Pentachlorophenol
Phenanthrene
Phenol
Chrysene
Dibenz(a,h)anthracene
Dibenzofuran
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
3,3-Dichlorobenzidine
2,4-Dichlorophenol
Diethylphthalate
2,4-Dimethylphenol
Dimethyphthalate
Di-n-butylphthalate
Di-n-octylphthalate
4,6-Dinitro-2-methylphenol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Fluoranthene
Fluorene
Pyrene
1,2,4-Trichlorobenzene
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Indeno(1,2,3-cd)pyrene
Isophorone
2-Methylnaphthalene
2-Methylphenol
4-Methylphenol
Naphthalene
2-Nitroaniline
3-Nitroaniline
4-Nitroaniline
Nitrobenzene
2-Nitrophenol
4-Nitrophenol
N-Nitroso-di-n-propylamine
N-Nitroso-diphenylamine
2,2-oxybis(1-Chloropropane)
2,4,5-Trichlorobenzene
2,4,6-Trichlorobenzene

Table I.1 Soil Analyte List (Continued)

Pesticides/PCB's		
Aroclor-1016	Delta-BHC	Endosulfan II
Aroclor-1221	Gamma-BHC	Endosulfan sulfate
Aroclor-1232	alpha-Chlordane	Endrin
Aroclor-1242	gamma-Chlordane	Endrin aldehyde
Aroclor-1248	4,4'-DDD	Endrin ketone
Aroclor-1254	4,4'-DDE	Heptachlor
Aroclor-1260	4,4'-DDT	Heptachlor epoxide
Aldrin	Dieldrin	Methoxychlor
Alpha-BHC	Endosulfan I	Toxaphene
Beta-BHC		
Inorganics		
Aluminum	Copper	Potassium
Antimony	Cyanide	Selenium
Arsenic	Iron	Silver
Barium	Lead	Sodium
Beryllium	Lithium	Thallium
Bismuth	Magnesium	Tin
Cadmium	Manganese	Vanadium
Calcium	Mercury	Zinc
Chromium	Molybdenum	Nitrate/Nitrite
Cobalt	Nickel	Explosives (USATHAMA,PETN)
Radionuclides		
Americium-241	Plutonium-238	Thorium-230
Bismuth-207	Plutonium-239/240	Thorium-232
Bismuth-210	Potassium-40	Uranium-234
Cesium-137	Radium-226	Uranium-235
Cobalt-60	Thorium-228	Uranium-238

Table I.2. Variance From 3-Foot Sampling Depth Specification

Location	Description of Variance
SGC-NAC-000001	Core sampler hit refusal at 2 feet.
SGC-NAC-000002	Relocated due to utilities.
SGC-NAC-000003	Core sampler hit refusal at 2 feet.
SGC-NAC-000004	Core sampler hit refusal at 18 inches.
SGC-NAC-000005	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000006	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-NAC-000007	Core sampler hit refusal at 18 inches.
SGC-NAC-000008	Drilled to 2 feet due to utilities.
SGC-NAC-000010	Drilled to 1 foot; hand-augered rest due to utilities; flag against building, so sample taken 6 feet from flag.
SGC-NAC-000012	Drilled to 2 feet due to utilities.
SGC-SAN-000018	Core sampler hit refusal at 2 feet; relocated from inside clarifier.
SGC-NAC-000029	Core sampler hit refusal at 18 inches.
SGC-A61-000043	Sampled 1 foot from flag.
SGC-A61-000047	Drilled to 2 feet due to utilities.
SGC-A61-000048	Drilled to 2 feet due to utilities.
SGC-A61-000049	Relocated due to utilities.
SGC-A61-000051	Core sampler hit refusal at 18 inches.
SGC-A61-000052	Relocated due to utilities; core sampler hit refusal at 18 inches.
SGC-A61-000053	Core sampler hit refusal at 2 feet.
SGC-A13-000056	Core sampler hit refusal at 18 inches
SGC-A13-000058	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A13-000060	Core sampler hit refusal at 1 foot.
SGC-AOJ-000064	Core sampler hit refusal at 2 - 3 inches.
SGC-AOJ-000066	Core sampler hit refusal at 4 inches.
SGC-AOJ-000067	Core sampler hit refusal at 6 inches.
SGC-AOJ-000069	Core sampler hit refusal at 2 feet.
SGC-A03-000080	Core sampler hit refusal at 20 inches
SGC-A03-000081	Drilled to 2 feet due to utilities.
SGC-A03-000082	Drilled to 1 foot, hand-augered rest due to utilities.
SGC-A03-000083	Sampled 25 feet from original location due to storm sewer; core sampler hit refusal at 18 inches.
SGC-A03-000087	Core sampler hit refusal at 2 feet.
SGC-A21-000088	Core sampler hit refusal at 18 inches.
SGC-A21-000090	Core sampler hit refusal at 20 inches.
SGC-SDB-000097	Relocated due to utilities.
SGC-SDB-000098	Relocated from inside a building.
SGC-SDB-000101	Relocation of SGC-SDB-000099; first location surveyed incorrectly.
SGC-SDB-000102	Relocation of SGC-SDB-000100; first location surveyed incorrectly.


PARKING
CONRAIL RAILROAD
W.E. 709.9
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Mag-80
Mag-81
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WH1
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PRS Locations
Soil Gas Confirmation Sampling Locations

Table A.1

Detected Volatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-AOJ-000074	SGC-AOJ-000075	SGC-AOJ-000076	SGC-A03-000079	SGC-A03-000081
PETREX SAMPLE AREA			AREA J	AREA J	AREA J	AREA 3	AREA 3
Acetone	NA	21000000		7 J			
1,2-Dichloroethene (total)	NA	43000000					
2-Butanone	NA	93000000					
Benzene	NA	8.90E+03					
Carbon Disulfide	NA	280000					
Chloroform	NA	3100					
Chloromethane	NA	NA					
Ethylbenzene	NA	480					
Methylene Chloride	NA	3.95E+05	10	12	11		6
Tetrachloroethene	NA	21000000					
Toluene	NA	250000			1 J	1 J	
Trichloroethene	NA	41000					
Xylene (total)	NA	430000000					

No entry - not detected
J - Numerical value is an estimated quantity
C - Identification confirmed by GC/MS
mg/kg - micrograms per kilogram

Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

A non-entry indicates that the analyte was not detected in the analysis. Note: No entry for SGC NAC 000080

Table A.2.

Detected Semivolatile Organic Compounds (µg/kg)

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-AOJ-000076	SGC-AOJ-000077	SGC-AOJ-000078	SGC-A03-000080	SGC-A03-000081	SGC-A03-000082	SGC-A03-000083
PETREX Sample Area			AREA J	AREA J	AREA J	AREA 3	AREA 3	AREA 3	AREA 3
Acenaphthene	NA	NA					89 J		
Acenaphthylene	NA	NA				280 J	220 J		
Anthracene	NA	64,000,000	35 J		29 J	150 J	150 J		
Benzo(a)anthracene	NA	4,100	280 J	210 J	150 J	480	560		25 J
Benzo(a)pyrene	NA	410	92 J	260 J	160 J	850	660		28 J
Benzo(b)fluoranthene	NA	4,100	250 J	200 J	150 J	640	580		25 J
Benzo(g,h,i)perylene	NA	NA	30 J	170 J	100 J	590	310 J		26 J
Benzo(k)fluoranthene	NA	41,000	200 J	200 J	150 J	630	580		27 J
Bis(2-ethylhexyl)phthalate	NA	215,000		22 J	35 J				
Butylbenzylphthalate	NA	43,000,000							
Carbazole	NA	NA	35 J		23 J	19 J	45 J		
Chrysene	NA	410,000	630	220 J	170 J	500	690		32 J
Di-n-butyl phthalate	NA	21,000,000							
Di-n-octyl phthalate	NA	4,300,000							
Dibenz(a,h)anthracene	NA	410		47 J	31 J	180 J	110 J		
Dibenzofuran	NA	NA				56 J	84 J		
Diethyl phthalate	NA	NA							
Fluoranthene	NA	8,500,000	2100	280 J	320 J	780	890	110 J	52 J
Fluorene	NA	NA				89 J	81 J		
Indeno(1,2,3-cd)pyrene	NA	4,100	45 J	140 J	91 J	580	440		16 J
2-Methylnaphthalene	NA	NA				25 J	79 J		
Naphthalene	NA	NA				79 J	45 J		
Phenanthrene	NA	NA	130 J	45 J	170 J	370 J	520		18 J
Phenol	NA	130,000,000			150 J				
Pyrene	NA	6,400,000	1700	300 J	300 J	690	930	92 J	50 J

No entry - not detected
J - Value is an est. quantity
D - Sample was diluted
NA - Value not available
H - Analyzed outside holding time
µg/kg - micrograms per kilogram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.4.
Detected Inorganics

ANALYTE	Background Value	Industrial Scenario Guideline Criteria	SGC-AOJ-000075	SGC-AOJ-000076	SGC-AOJ-000077	SGC-AOJ-000078	SGC-A03-000079	SGC-A03-000080	SGC-A03-000081	SGC-A03-000082
PETREX Sample Area			AREA J	AREA J	AREA J	AREA J	AREA 3	AREA 3	AREA 3	AREA 3
TAL INORGANICS (mg/kg)										
Aluminum	19000	NA	7660	7730	12700	5570	4090	7450	4850	2070
Antimony	NA	85	0.26 B				0.93 B			
Arsenic	8.6	64	4.7	2 B	2.8	3 B	5.5	3.3	4.5	3.6 B
Barium	180	15,000	45.4 B	53	85.8	38.7 B	34.4 B	21 B	34.9 B	26.9 B
Beryllium	1.3	1	0.47	0.43	0.42		0.13 B	0.16 B	0.16 B	
Bismuth	NA	NA			1 B					
Cadmium	2.1	210			6.3	2.1			0.28 B	0.21 B
Calcium	310000	NA	102000	88100	174000	143000	126000	133000	132000	164000
Chromium	20	110,000	11.4	12.2	17	9.2	7.3 J	10.4	7.9	6
Cobalt	19	NA	8 B	6.8 B	11.1 B	4.1 B	6.8 B	7.7 B	5.1 B	2.1 B
Copper	26	NA	17.2	13.9	22.4	10.5	15 J	11.2	13.6	6.1
Cyanide	ND	4,300						0.58 B		
Iron	35000	NA	16400	16700	28700	9480	13400 J	20400	12900	6180
Lead	48	NA	12	8.2	8.8	5.6	9.4 J	9.6	7.8	6.8
Lithium	26	NA	15.2 B	13.1 B	22.9 B	5.6 B	13.6 B	26.6	8.6 B	4.7 B
Magnesium	40000	NA	33000	32300	37500	47400	49400 J	25300	47500	85100
Manganese	1400	27,000	481	437	598	372	340 J	445	305	279
Mercury	ND	64		0.29					0.06 B	
Molybdenum	27	NA	1.2 B	2.3 B	2.8 B	1.6 B	2.1 B		1.9 B	1.4 B
Nickel	32	4,300	17.7	16.6	26	8.9 B	17.1	17	13.2	6.1 B
Potassium	1900	NA	1430	1290	1420	678 B	829 B	1400	674 B	306 B
Selenium	NA	NA								
Silver	1.7	1,100								
Sodium	240	NA	164 B	236 B	1450 B	415 B	171 B	347 B	218 B	464 B
Thallium	0.46	NA								
Tin	20	NA	0.94 B	0.99 B	1.8 B	0.88 B	3.7 B	0.98 B		
Vanadium	25	1,500	15.8	18.5	24.2	12.6	10.8 J	8.8 B	10.9	8
Zinc	140	64,000	60.7	48	75.2	38.7	43.6 J	39.6	43.2	27
OTHER INORGANICS										
% Solids (%)	NA	NA	85.3	86.8	85.8	89.4	88.1	86.6	90.2	92.3
Nitrate/Nitrite (mg-N/kg)	NA	NA	3.5	2.2	0.64	2.9	2.2	3.7	2.2	1.4

No entry - not detected
mg/kg - milligrams/kilogram
NA - Value not available
NC - Background not comp
ND - No detections in background samples
mg-N/kg - milligrams per kilogram, reported as nitrogen
J - Numerical value is an estimated quantity
B - Analyte detected in blanks associated with this sample
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)

Table A.5.

Detected Radionuclides (pCi/g)

ANALYTE	Background	Industrial Scenario Guideline Criteria	SGC-AOJ-000076	SGC-AOJ-000077	SGC-AOJ-000078	SGC-A03-000079	SGC-A03-000080
PETREX Sample Area			AREA J	AREA J	AREA J	AREA 3	AREA 3
Americium-241	ND	4.95					
Bismuth-207	ND	0.18					
Bismuth-210	ND	NA					
Cesium-137	0.42	0.46			0.0687	0.244	
Cobalt-60	NC	0.10					
Plutonium-238	0.13	5.5	0.0855	**0.834**	**1.06**	**1.84**	0.0388
Plutonium-239/240	0.18	5.5	0.00207		0.00383	0.0107	
Potassium-40	37	NA	16.7	15.2	21.5	14.8	10.1
Radium-226+D	2	0.14	**0.658**	**0.861**	**0.765**	**0.879**	**0.519**
Thorium-228+D	1.5	0.85		0.846	**1.21**	0.515	0.343
Thorium-230	1.9	44	1.18	1.14	0.837	1.01	0.63
Thorium-232	1.4	50	0.744	0.77	1.07	0.716	0.304
Uranium-234	1.1	38	0.814	0.679	0.702	0.819	0.523
Uranium-235+D	0.11	3.4	0.0345	0.0399	0.0361	0.0393	
Uranium-238+D	1.2	11.0	0.914	0.842	0.718	0.912	0.605

No entry - not detected
ND -No detections in background samples
NA - Data not available
NC - Background value not computed
pCi/g - picocuries per gram
Red = above Guideline Criteria (GC)
Green = above GC and below Background
Magenta = above Background and Below GC
Blue = above Background (no GC)